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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 32278-2025

Replacing GB/T 32278-2015

**Test method for thickness and flatness of monocrystalline
silicon carbide wafers**

碳化硅单晶片厚度和平整度测试方法

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document replaces GB/T 32278-2015 "Test method for flatness of silicon carbide single wafer" and GB/T 30867-2014 "Test method for flatness of silicon carbide single wafer".

This document is based on GB/T 32278-2015 and integrates GB/T 30867-2014.

Compared with GB/T 32278-2015, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- a) The scope of application of the document has been changed (see Chapter 1, Chapter 1 of GB/T 32278-2015);
- b) Added references to the terms and definitions in GB/T 14264, and added the term and definition of "silicon carbide single crystal wafer" (see Chapter 3);
- c) The term and definition of "local thickness variation" have been deleted (see 3.1 of GB/T 32278-2015);
- d) Added contact test method and incorporated relevant contents of GB/T 30867-2014 after modification (see Chapter 4);
- e) The test optical path diagram for the non-contact test method has been changed (see 5.1, Chapter 4 of GB/T 32278-2015);
- f) The interference factors of the non-contact test method have been changed to include the influence of surface roughness, and GB/T 30656 and GB/T 43885 have been cited.

Requirements for surface roughness in GB/T 32278-2015 (see 5.2, Chapter 6 of GB/T 32278-2015);

g) The test conditions for the non-contact test method have been changed (see 5.3, Chapter 7 of GB/T 32278-2015);

h) The instrument and equipment for non-contact test methods have been changed (see 5.4, Chapter 5 of GB/T 32278-2015);

i) The sample requirements for non-contact test methods have been changed (see 5.5, Chapter 8 of GB/T 32278-2015);

j) The test steps of the non-contact test method have been changed (see 5.6, Chapter 9 of GB/T 32278-2015);

k) The precision requirements for non-contact test methods have been changed (see 5.7, Chapter 10 of GB/T 32278-2015).

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document was jointly issued by the National Technical Committee on Semiconductor Equipment and Materials Standardization (SAC/TC203) and the National Technical Committee on Semiconductor Equipment and Materials Standardization (SAC/TC203).

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This document was drafted by: Beijing Tianke Heda Semiconductor Co., Ltd., the 46th Research Institute of China Electronics Technology Group Corporation, Shandong Tianyue Advanced Technology Co., Ltd., Anhui Changfei Advanced Semiconductor Co., Ltd., Guangdong Tianyu Semiconductor Co., Ltd., Nanjing Shengxin Semiconductor Materials Co., Ltd., Nonferrous Metals Technology and Economic Research Institute Co., Ltd., Zhejiang Jingrui Electronic Materials Co., Ltd., Lianke Semiconductor Co., Ltd., Changfei Optical Fiber and Cable Co., Ltd., and Painjie Semiconductor (Zhejiang) Co., Ltd.

The main drafters of this document are: She Zongjing, Peng Tonghua, He Xuankun, Wang Dajun, Wang Bo, Yang Jian, He Dongjiang, Wu Dianrui, Liu Xiaoping, Liu Wei, Huang Yucheng, Hu Dongli, Wang Chuanyong, Zhao Wenqi, and Huang Xing.

This document was first published in 2015. This is the first revision. The revision incorporates GB/T 30867-2014 "Silicon Carbide Single Wafers" Thickness and total thickness change test method".

1 Scope

This document describes the thickness and flatness test methods for silicon carbide single

wafers, including contact and non-contact test methods.

This document is applicable to thicknesses of 0.13mm~1mm and diameters of 50.8mm, 76.2mm, 100mm, 150mm, and 200mm.

Testing of thickness and flatness of silicon carbide single wafers.

This document is also applicable to the testing of thickness and flatness of silicon carbide epitaxial wafers.

2 Normative references

GB/T 14264

GB/T 25915.1-2021

GB/T 30656

GB/T 43885

3 Terms and Definitions

The terms and definitions defined in GB/T 14264 and the following apply to this document.

3.1

A thin slice with parallel planes cut from a silicon carbide single crystal.

Note. Silicon carbide single crystal wafers include cutting wafers, grinding wafers, polishing wafers, etc.

4.1 Principles of the Method

The measurement is carried out by physical contact, the measuring head is placed on the surface of the sample to be measured, and pressure is applied to ensure that the measuring head is in contact with the sample to be measured.

The measuring head will move inward or outward accordingly when the thickness of the sample changes.

The shaft transmits the mechanical displacement to the sensor, which converts the mechanical displacement into an electrical signal and transmits it to the internal processing circuit. The processing circuit amplifies the signal.

The corresponding displacement value can be calculated by converting the displacement value. The thickness and total thickness change values can be obtained according to the change of the displacement value.

This method is suitable for testing the thickness and total thickness variation of silicon

carbide single wafers.

4.2 Interference Factors

4.2.1 When measuring, the measuring head needs to apply appropriate pressure. Excessive pressure may cause the measured sample to deform, thus affecting the measurement.

Therefore, contact measuring equipment should have a limit device to ensure that the applied measuring force is within a reasonable range.

4.2.2 The cleanliness of the sample surface affects the test results. The sample should be cleaned before testing to ensure that the sample surface is clean.

4.2.3 The flatness of the stage will affect the contact between the sample and the measuring head, thus affecting the measurement accuracy. Therefore, before use, ensure that